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August 2001

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Tech Transfer names top design team

by AFRL Public Affairs

WRIGHT-PATTERSON AFB, Ohio —The Air Force Research Laboratory (AFRL) has announced the Evolution Vectron Aircraft design team as the winner of its Technology Transfer Award for the 2000-2001 NASA/FAA National General Aviation Design Competition for university students.

Design awards continued on page 3

OHIO GOVERNOR VISITS AFRL — Ohio Gov. Bob Taft, left, pictured alongside of Bob May, Executive Director of the Air Force Research Laboratory participates in a briefing by Educational Outreach director Kathy Schweinfurth during his visit to Wright-Patterson Air Force Base on July 25. Later in the day, Taft signed a law creating the Ohio Aerospace and Defense Advisory Council, which will lobby Washington to secure more federal funding, programs and jobs for Ohio's aerospace and defense industries.@ (Air Force photo by Jill Bohn)

Breaking News - 2001 Fellows named

The Air Force Research Laboratory has announced five of its members to be recognized as 2001 AFRL Fellows. This year's honorees are Dr. Gordon D. Hager, Directed Energy Directorate, Arlington, Va.; Dean F. Kocian, Human Effectiveness Directorate, Wright-Patterson AFB, Ohio; Dr. Ruth Pachter, Materials and Manufacturing Directorate, Wright-Patterson AFB; Dr. Stephan D. Price, Hansom AFB, Mass.; and Dr. Harold Weinstock, Air Force Office of Scientific Research, Arlington, Va.

See our next issue of news @ afrl for a feature story on these accomplished leaders.

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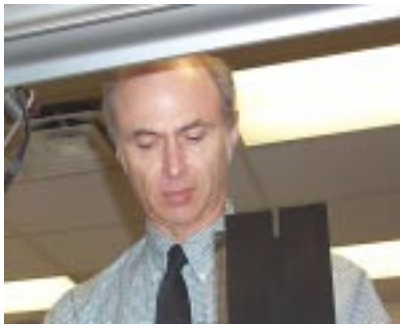
http://extra.afrl.af.mil/news/index.htm

Goldstein inducted as SPIE Fellow

by Rex Swenson, Munitions Directorate



Dennis F. Goldstein

EGLIN AFB, Fla. — A member of the Air Force Research Laboratory Munitions Directorate was inducted as a Fellow by SPIE, The International Society for Optical Engineering at their 46th annual awards banquet held August 1, in San Diego, Calif.

"The annual recognition of Fellows provides an opportunity for us to acknowledge outstanding members for their service to the general optics community," said Richard B. Hoover, SPIE President.

Dennis H. Goldstein, a physicist, at the Munitions Directorate has chaired five SPIE conferences on polarization and was the driving force behind the organization of the successful new SPIE Polarization Technical Group.

"It is an honor to be selected as a Fellow by this prestigious society of my peers. I look forward to continued service to SPIE," said Goldstein, who was recognized for his significant contributions to the fields of polarimetry and optical signal processing.

Each new fellow joins nearly 400 SPIE members so honored for their contribution to the discipline since the Society's inception in 1955.

The Advanced Guidance Division lab facility developed by Goldstein at Eglin, is an important technical asset to the polarization community.

Goldstein has worked for the Air Force for a quarter of a century, 23 of those year have been with the Armament Laboratory and the Munitions Directorate. He has published five patents and more than 50 articles. Among his developments are invariant spatial filters, a patented phase-encoding scheme, and the use of the genetic algorithm for spatial filter development. @

Find additional Fe@tures on the web

Legacy lives on in patented reporting system

AFRL workshop hosts historically black universities

Airborne Laser is exhibited at Dayton Air Show

AFRL hosts summer hire tour and recruiting event

Design awards (from page 1)

WINNING DESIGN — A University of Virginia student team won the award for Best Use of Air Force Technology in the 2001 National General Aviation Design Competition. A drawing of the design is pictured.

WINNING TEAM — Dennis Carter, pictured on left, Senior Aerospace Engineer at the Air Force Research Laboratory, is shown presenting the award to team representatives Jeff Braden, center, and Matt Daniel, right.

Dennis Carter, AFRL Air Vehicles Directorate Senior Aerospace Engineer presented the award to the winning team, the University of Virginia, Charlottesville, Va., during the Experimental Aircraft Association's Air Venture in 2001 in Oshkosh, Wis. on July 28.

"This award recognizes the design team demonstrating the best use of Air Force Research Laboratory technology in a student design project," Carter said. AFRL offers a $3,000 team award each year for an aircraft design or aircraft subsystem design, which also meets the criteria of the National General Aviation Design Competition and included Air Force-developed technologies.

"A panel of AFRL experts reviewed the student designs for application of Air Force technologies to select the winner of this Technology Transfer award," Carter explained.

These technologies included: wireless flight controls, aerogel and serrated engine nozzle edge noise reduction techniques, and non-hydraulic, electric actuator systems.

Dubbed as "safe, versatile, innovative, easy-to-fly and stylish," the Vector Evolution design combines "the fast, high altitude performance of a business jet with the short takeoff and landing performance of tail dragger."

The project was a team effort between 26 engineering and architecture students at the university. Some of the goals developed by its members were to implement both state of the art and developing technologies in all aspects of the design, and Air Force technologies; to maximize cruise speed to 375 knots while maintaining stall speeds less than 50 knots; to minimize cabin noise for a less distracting, more relaxing flight; reduce stall speeds to increase flight safety; and to develop an appealing interior and exterior design.

The team collaborated with resources to include colleagues from the University of Virginia's Architecture School for their expertise in aesthetic and ergonomic design, and local pilots and airport staff to get input from those intimately involved in general aviation for the development of their winning design.

The AFRL Technology Transfer Program was created to assure all Air Force science and engineering activities promote the transfer or exchange of technology with the state and local governments and the private sector. **@**

Equipment transfer aids research at U. of West Florida

by Rex Swenson, Muntions Directorate

EGLIN AFB, Fla. — The saying, "One man's trash is another man's treasure," proved true recently as Air Force Research Laboratory officials donated surplus scientific equipment to the University of West Florida, saving the school between $150,000 and $175,000.

AFRL's Munitions Directorate donated a scanning electron microscope, infrared spectrometer and other equipment which "is tremendously useful and will broaden the horizons in not only student research, but research performed by faculty members as well," said George Stewart, chairman of the UWF biology department.The donation idea came about during a Gulf Coast Alliance for Technology Transfer quarterly board of directors meeting a few months back, said Paulette Risher, Munitions Directorate business development branch chief.

Risher and William Huth, associate vice president for research and graduate studies at UWF, discussed different technology transfer mechanisms.

"I'd been made aware of some laboratory equipment that was going tobe sent to the Defense Reutilization Marketing Office, where it probably would be sold off as scrap," Risher said.

Using the Education Partnership Agreement. Risher was able to offer Huth the equpment. According to the Educational Partnerships portion of the U.S. Code, "Under a partnership agreement with an educational institution, the director of a defense laboratory may provide assistance to the educational institution by transferring to the institution defense laboratory equipment determined by the director to be surplus."

With the path cleared, Allen Geohagan, a support contractor with the munitions directorate, worked the equipment transfer for the Air Force.

"I contacted Huth and worked out the details between the munitions directorate, the university and the Logistics Material Control Agency within the (Munitions Directorate)," Goehagan said. **@**

Fire Research Group sets fire suppression speed record

by Timothy R. Anderl, Materials and Manufacturing Directorate

TYNDALL AFB, Fla. — The Materials and Manufacturing Directorate's Fire Research Group has developed the world's fastest fire suppression device.

The technology has been a laboratory phenomenon that will protect workers and reduce environmental discharges of large amounts of water saturated with munitions material. The secret of the Advanced Fire Protection Deluge System (AFPDS) is its ability to detect a fire in its beginning stage, just a few milliseconds, and provide cooling water to the burning hazard before the fire gains momentum.

Steven Wells, a project engineer who works at the group, provided attendees of the recent American Institute of Chemical Engineers Annual Meeting a preview of this device. It will extinguish highly explosive or burning materials at speeds of twenty thousandths of a second or slightly more.

Hazardous, flammable and explosive materials pose a significant risk in military plants that produce, maintain and renovate suffered loss of life and severe property damage.

The facilities also encounter problems with false alarms, because UV detector-driven suppression systems react to other stimulus in the area. False activations dump thousands of gallons of munitions-contaminated water and lead to environmental nightmares, Wells said.

"Each time a facility experienced a false alarm 'dump,' the depot lost production man-hours while technicians cleaned up," Wells said. "When AFRL was asked by the U.S. Army Operations Support Command to help determine what was causing the false alarm problem, we discovered that the suppression systems in use were much slower than needed to extinguish accidental, quickly-burning fires associated with component materials in today's munitions."

With the Army's approval, AFRL built a prototype system and started formal testing in January 1996. To date, over 200 "burn" tests have been accomplished. The prototype uses dual band infrared and combination ultraviolet/infrared optical fire detectors, high-speed pressurized water discharged from 10 and 30 liter high-rate discharge spheres, and follow-on pressurized water from standard nozzles found in existing plants and arsenal systems.

"When we combined two different detectors from different manufacturers it enhanced the system's ability to monitor and protect a single location," Wells said. "We have some materials that will start to burn slowly and get to a point where they go 'boom;' in this case we'd need a detector that sees that slow burn. In other cases, when we push the button that ignites that same material, it goes 'boom' immediately. In that case we want a detector that picks up and reacts to the rapid propagation."

The detectors chosen had proven themselves for speed and immunity to false alarms while being used with Halon fire protection systems in armored personnel carriers and tanks. These detectors were subjected to additional evaluations that proved they would produce a system virtually immune to accidental discharges.

The prototype AFPDS system can be activated within a few milliseconds. When a detector recognizes a burning material, the controller activates a high-rate discharge extinguisher that is charged with nitrogen and water. An actuator inside the extinguisher causes the discharge of water in a fine mist, reducing the possibility of fire, explosion, environmental problems and hazardous fumes. Pressurized water from follow-on nozzles is supplied to provide additional cooling for a period of a few seconds.

water on personnel in the area immediately to eliminate the heat that could burn their skin," Wells said.

"The DoD standard, which was based on available technology, indicates that water should be present at the nozzle tip in 100 milliseconds," Wells said. "The AFPDS produces water at the nozzle tip in four to eight milliseconds, more than ten times faster that the current DoD standard. The nozzles are placed close to the hazard, so the water travels the short distance to the material in 18 milliseconds."

ROTC Cadet Bryan Walter overcomes obstacles in Rome

TRAINING NOT AN OBSTACLE — Bryan Walter (pictured), an Air Force ROTC cadet, navigates the Fort Drum (N.Y.) obstacle course during June 15 Combat Day activities for AFRL military personnel at the Rome Research Site. Cadet Walter is participating in a summer program at Rome that combines high technology research and professional military development. @ (Air Force photos)

Eglin AFB display highlights weapons at Paris Air Show

by Jake Swinson, Air Armament Center Public Affairs

EGLIN AFB, Fla. — Eglin was well represented at the prestigious Paris Air Show last month with a display exhibit in the Department of Defense booth. The Eglin display was a joint effort between the Air Armament Center and the Air Force Research Laboratory's Munitions Directorate.

Among the materials available were DVD movies depicting Eglin weapons being tested, brochures and fact sheets outlining the base's facilities and their capabilities, and poster board displays showcasing Eglin's state-of-the-art technologies. The favorite attraction in the Eglin exhibit was a full-scale model of the miniature cruise missile known as the Low-Cost Autonomous Attack System. Another popular display item was a scale model of four Small Smart Bombs loaded on a prototype pneumatic ejector rack.

The Eglin delegation was led by AAC Commander Maj. Gen. Michael Kostelnik, a strong advocate of Eglin participation in the international exposition.

"Eglin's role in arming the Air Force and its crucial role in the successful outcome of the Desert Storm and Kosovo Campaigns has drawn international attention to our smart weaponry. The international gathering is a great forum for reaching thousands of military personnel, aerospace industry executives and aviation enthusiast and let them see what they have been reading about in the news media," the general explained.

Col. David J. Eichhorn, who relinquished command of AAC's 46th Test Wing Tuesday to depart for his new assignment as commander of the Arnold Engineering Development Center in Tennessee, also attended the air show.

"'Air Show' is a bit of a misnomer," Eichhorn said. "I, personally, saw very little air show. It's very much a 'trade' show. I talked business and partnership opportunities with most of the 46th Test Wing's primary customers."

"The who's who of aviation were gathered at the event, making it the most cost-effective way I know to forge the professional relationships we need. International interests in using Eglin's air armament expertise and capability is growing, and I expect we'll see more coalition partner testing here in the future," Eichhorn said.

AFRL's Munitions Directorate at Eglin also has a strong interest in fostering international participation in its technology development programs, and is already involved in this arena.

"From the lab's perspective, we are allowed to have international data exchange agreements with other nations to share technologies that reflect 'quid pro quo' arrangements where there is no exchange of money, or even exchange of hardware," said Col. Norman Leonpacher, who heads the directorate's Assessment and Demonstrations Division. "Both sides walk away from the table with benefits from the tests."

The role of the senior officers at the trade show related to networking, but younger officers at the trade show approached it from a different perspective. 2nd Lt. Rebecca Ortiz, a chemical engineer with AFRL's Munitions Directorate, was an especially valuable member of the Eglin team — not only does she work with the latest technology but she also speaks fluent French.

"I had never attended an air show," stated Ortiz, "and I was excited to be selected to attend the Paris Air Show. A lot of the young French officers would talk to me about what they did in the French Air Force and were eager to find out what they would be doing if they were in the U.S. Air Force. It was surprising to learn how little we knew about them and vice versa. We developed camaraderie and benefited from the humanistic side. I think the French respected us more because we had some French-speaking attendees," she said. **@**

Ceremonial Dining In held in Rome, N.Y.

ROME, N.Y. — Personnel from the AFRL Rome Research Site conduct a POW/MIA Remembrance Ceremony as part of the group's Combat Dining In held June 15 at the Griffiss Business & Technology Park. @ (Air Force photo by Albert P. Santacroce)

ML shares future plans during annual Roadmap Review

by Timothy R. Anderl, Materials and Manufacturing Directorate

WRIGHT-PATTERSON AFB, Ohio — Leaders from industry, government and academia gathered at the Dayton Convention Center July 17-19 to participate in the Air Force Research Laboratory's 2001 Materials and Manufacturing Directorate Roadmap Review.

The purpose of this annual review was to provide information concerning the directorate's planned fiscal 2002 technology programs. The review offered participants insight into planned Air Force materials and manufacturing research and development activities, and the opportunity to offer suggestions and ideas on future directorate research and development efforts.

"The review allows us the opportunity to communicate our future research and development goals to industry," said Reynaldo Carranza, AFRL's Materials and Manufacturing Directorate Roadmap Review organizer. "It allows them to see where we are spending our time, energy and money."

2001 ROADMAP REVIEW — Air Force Research Laboratory's Maj. Gen. Paul D. Nielsen addresses attendees of Roadmap Review.

AFRL Commander Maj. Gen. Paul D. Nielsen welcomed attendees and provided them with the laboratory's perspective on science and technology.

"Science is a full-contact, team sport. By collaborating tightly on present and future challenges we prove that we are good and responsible scientists and engineers," Nielsen said. "This conference is extremely important because we will use the input we gather to produce science and technology miracles that affect the whole country."

Each day, breakout workshops offered the opportunity to learn more about specific technology areas pursued by directorate researchers. Workshops were conducted on the directorate's core technology areas. Industry input was solicited on topics such as Air Expeditionary Force Technologies, ManTech Strategic Plan, Materials and Processes for Sensors, Metals/Ceramics, Nonmetals, Small Business Innovative Research, and Systems Support.

"These workshops are invaluable because they allow our program managers and project engineers to have two-way discourse with peers in industry concerning our programs," Carranza said. "This open communication allows the directorate and attendees to foster a relationship and to answer important questions, which could lead to solutions to future technical challenges."

Materials and Manufacturing Directorate Director Charles Browning gave an overview of the directorate's mission of helping industry maintain an affordable and effective defense materials and manufacturing capability. Directorate engineers also discussed program accomplishments, presented planning activities and future new starts, and provided direction and guidance to the defense materials and manufacturing community.

The SBIR industry event allowed researchers to share with attendee's topics for aerospace materials research and development that require innovative solutions. Each year, the Air Force identifies a number of challenging areas in aerospace and research that require inventive, "out-of-the-box" solutions.

The SBIR program allows small business to compete for research funding and help solve these technical and scientific challenges. Information and strategies that industry participants gathered at the meeting will assist them in submitting strong, competitive, and cost-effective proposals on fiscal year 2002 topics.

"Our workforce of civilian, military, industry, and academic researchers conduct exploratory, basic and advanced development research that meets the needs of the Air Force as we face the 21st century," Browning said. "As a full spectrum, pervasive organization, collaboration, interaction and networking are our themes during the Roadmap Review and throughout the year." **@**

AFMC Announcements

Reassignment

Col John F. Anthony Jr.
FROM: Chief, Space Technology Integration & Demonstration Div, AFRL, KIRTLAND AFB NM
TO: Chief, Assignments and Readiness Division (AFSPC/DPA), PETERSON AFB CO
RNLTD: 15 Sep 01

Retirement

Horst R. Wittman SES
FROM: Associate Director for Sensors, AFRL/SN, Hanscom AFB MA
Effective Date: 31 Aug 01

AFRL puts on a smile for the Hometown News Team

IN THE SPOTLIGHT – Cameras and lights were noticed lab wide the week of August 6 as the Army and Air Force Hometown News Service team invaded the Air Force Research Laboratory, Wright-Patterson Air Force Base sites. Videos of military and civilian personnel were shot and interviews will be sent to hometown television stations to be used during their news broadcast. Pictured above left Materials and Manufacturing Directorate's (ML) Steven Patton makes adjustments to an experimental apparatus in the Microelectromechanical Systems Tribology Laboratory, while Hometown News Staff Army SGT Chris Seaton and Air Force SSgt. Jeramie Brown capture the action on video tape. Top right - Brown films Amy Peppard (center) and Heather Argadine as they examine friction measurements on a Cameron Plint machine in ML's Fluids and Lubes laboratory. The Hometown News team shot nearly 80 videos throughout the five labs and AFRL Headquarters. Bottom left - Col. Larry Strawser, Director of the Sensors Directorate and grad student Joseph Binford, working through the University of Dayton Research Institute for Veridian Engineering, stand by while Seaton shoot video footage of electro-optic warfare sensors. Bottom right - ML's Richard Vaia (civilian) films a video clip in front of the Laser Hardened Materials Evaluation Laboratory (LHMEL II) Laser. @ (Air Force photos by Vicki Stein)

Information Directorate's TSgt. Griglock selected as nominee for TOYA award

by Fran Crumb, Information Directorate

ROME, N.Y. — TSgt. David A. Griglock of the Air Force Research Laboratory (AFRL) Information Directorate has been selected as the AFRL nominee for the Ten Outstanding Young Americans (TOYA) Award sponsored annually by the U.S. Junior Chamber of Commerce.

Griglock, an information craftsman in the directorate's Special Projects Office, will now be considered by the Air Force Materiel Command for nomination to the award that focuses on a line in the Jaycee Creed that states: "service to humanity is the best work of life." The award is restricted to young Americans ages 21 to 39.

A native of Pittston, Pa., Griglock was cited for his numerous public service activities, which range from packing food packages for the less fortunate and serving as mentor and judge at local science fairs to honoring veterans as a member of the Air Force Honor Guard.

Griglock enlisted in the Air Force in January 1985 and has been assigned to the AFRL Rome Research Site since March 1997. **@**

Net Index

Due to the number of submissions we receive, some sections of *news@**afrl*** are available exclusively on-line. The on-line version of the newsletter allows users to view the AFRL corporate calendar, news releases generated by AFRL headquarters, operating instructions, L@b L@urels and Roundups sections.

The L@b L@urels section of the electronic newsletter is dedicated to members of Air Force Research Laboratory who receive awards and honors. The Roundups section of the electronic newsletter keeps Air Force Research laboratory employees informed about contracts AFRL has awarded. Below is an index of articles one can find in each of these on-line sections.

L@b L@urels

- **AFRL's Air Vehicles Directorates honors award winners**
- **AFOSR "Star Team" award presented to AFRL/HEDO (pictured right)**

TEAM AWARD — Benjamin A. Rockwell (right) recently received the Star Team Award for FY 2000-2001 from Lyle Schwartz, Director AFRL's Air Force Office of Scientific Research. (Air Force photo)

For more on these stories see news@afrl http://extra.afrl.af.mil/news/index.htm

Roundups

- **AFRL Rome awards contract to Ithaca firm for JBI technologies**
- **AFRL awards small business contract to Itchaca firm**
- **Rome awards $6.5M in research contracts to colleges**
- **Rome research contract to protect computer networks**
- **Rome grants $3M contract for surveillance research**

To view the full text of these and other articles visit the *news@**afrl*** page on the Internet at http://extra.afrl.af.mil/news/index.htm.

To submit L@b L@urels or Roundups from your directorate, send a query to AFRL Public Affairs at:

Vicki.Stein2@afrl.af.mil
or,
Anne.Gunter@afrl.af.mil

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News Briefs and L@b Distinctions